

ABSTRACT**[82]**

A system and method for storing and processing physiological data in a medical recording device that allows continuous data collection and storage of such data in multiple time-resolved levels are provided. The method includes: sampling one or more physiological signals at a selected sampling rate; deriving physiological parameter values from the sampled signal; storing the parameter values as they are determined in a temporary memory buffer for a predetermined storage interval; determining a statistical aspect of the stored parameter values upon expiration of the storage interval; and writing the statistical aspect to a long-term memory buffer. A number of long-term memory buffers may be designated for storing a statistical aspect of a physiological parameter at uniquely different time resolutions. The resolution of each long-term memory buffer is determined by the storage interval defined for an associated temporary memory buffer, which stores parameter values from which statistical aspects are computed.